CLAIMS

1. A reinforcing material for proton conductive membrane, comprising a nonwoven fabric including, as essential components thereof, glass fibers having a C-glass composition and a binder for strengthening bonding between the glass fibers, wherein

an average fiber diameter of the glass fibers is in a range of 0.1 μm to 20 μm, and

an average fiber length of the glass fibers is in a range of 0.5 mm to 20 mm.

2. The reinforcing material according to claim 1, wherein the binder includes an inorganic binder.

3. The reinforcing material according to claim 2, wherein an amount of the inorganic binder is in a range of 0.5 % to 10 % of a weight of the glass fibers.

4. The reinforcing material according to claim 2, wherein the inorganic binder is silica.

5. The reinforcing material according to claim 1, wherein the binder includes a binder formed by using a liquid including a component of the binder.

6. The reinforcing material according to claim 1, wherein the binder includes a fibrous binder, and an amount of the fibrous binder is in a range of 1% to 40% of a weight of the glass fibers.

7. The reinforcing material according to claim 1, wherein an area density of the nonwoven fabric is in a range of 2 to 50 g/m^2.

8. The reinforcing material according to claim 1, wherein a thickness of the nonwoven fabric is 400 μm or less.

9. The reinforcing material according to claim 1, wherein a porosity of the nonwoven fabric is in a range of 60 to 98 vol.%.

10. The reinforcing material according to claim 1, wherein a surface of the nonwoven fabric is treated with a silane coupling agent.

11. The reinforcing material according to claim 10, wherein an amount of the silane coupling agent deposited to the nonwoven fabric is in a range of 0.5 mg to 200 mg per 1 m^2 of a surface area of the glass fibers.

12. A proton conductive membrane comprising a proton conductive substance and a reinforcing material, wherein the reinforcing material is a reinforcing material according to claim 1.

13. A fuel cell comprising a proton conductive membrane, wherein the proton conductive membrane includes a proton conductive substance and a reinforcing material, and the reinforcing material is a reinforcing material according to claim 1.